

## INSULATION HANGER

### BACKGROUND OF THE INVENTION

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This invention relates generally to the field of hangers, brackets, mounts or like devices, and more particularly to such devices adapted for use with horizontally extending boards such as joists or rafters in building construction, and even more particularly to such devices intended to support horizontally extensive materials such as blanket insulation between the joists or rafters.

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In the construction of buildings, and especially in the construction of residential buildings, it is necessary to provide insulation between the ceilings of rooms and the attic in order to prevent heat loss from the occupied rooms in to the attic in the cold months and to prevent heat influx from the attic into the rooms in the warm months. The insulation provides a thermal barrier that significantly reduces heat transfer through the ceiling. The most common forms of insulation used in these circumstances are insulation blankets, which come in batts or roll form, blown-in insulation and foamed-in-place insulation.

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The blankets are flexible products made from mineral fibers. They are available in widths suited to standard spacing of wall studs and attic or floor joists. Continuous rolls can be hand-cut and trimmed to fit. They are available with or without vapor retardant facings. Blown-in loose-fill insulation includes loose fibers or fiber pellets that are blown into building cavities or attics using special pneumatic equipment. Another form includes fibers that are co-sprayed with an adhesive to make them resistant to settling. The blown-in material can provide

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additional resistance to air infiltration if the insulation is sufficiently dense. Foamed-in-place polyurethane foam insulation is applied by a professional applicator using special equipment to meter, mix, and spray into place.

Installation of the insulation blankets, which usually comprise a paper envelope or at least  
5 two outer paper layers, typically involves incrementally positioning a short portion of the roll or batt between adjacent joists, hand-stapling the edges of the paper envelope to the bottoms of the adjacent joists, moving on to a next short portion of the blanket, hand-stapling the edges, etc. This work is performed overhead with the worker mounted on a ladder, scaffolding or stilts, and is thus a difficult and time-consuming task. Often times, after the insulation has been installed,  
10 portions of the blanket will be torn from the joists by accident or for access to fixtures or other items located above the insulation blanket for connection, repair or inspection. The insulation blanket must then be repaired and re-stapled to the joists.

It is an object of this invention to provide a means for installation of insulation blankets between joists or rafters that address the problems present in the common method of installing  
15 such blankets with regard to ease of installation, time of installation and obviating destruction of the blankets for the performance of various tasks subsequent to installation. It is a further object to provide such a means wherein a device is utilized that functions with various sizes of joist and rafter boards as well as with variations in joist and rafter spacing.

## SUMMARY OF THE INVENTION

The invention is a hanger device for supporting insulation blankets between adjacent  
5 joists or rafters, wherein the device is adjustable to accommodate different sizes of joists/rafters.  
The insulation hanger device comprises in general the combination of a hanger bracket and a  
mounting bracket. The hanger bracket is a generally L-shaped member having a generally  
horizontally disposed support arm to receive the insulation blanket and a generally vertically  
disposed adjustment arm. The mounting bracket is a generally U-shaped member adapted to fit  
10 on top of the laterally extended or inclined joists/rafters, and is provided with lateral retainer  
members to receive the adjustment arm of the hanger bracket in a manner that allows the hanger  
bracket to be adjusted in the vertical direction relative to the mounting bracket. Adjustment  
means are provided to fix the hanger bracket in the desired position relative to the mounting  
bracket. To utilize the invention, plural hanger devices are positioned at spaced intervals along  
15 the length of adjacent joists/rafters with the support arms extending into the space between the  
joists/rafters. The height of the support arms relative to the joists/rafters are adjusted and the  
insulation blanket is laid on top of the support arms.

### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the invention showing the exposed side of the  
5 adjustment arm of the hanger bracket.

Figure 2 is a perspective view of the invention showing the detent side of the adjustment  
arm of the hanger bracket.

Figure 3 is a front view of the mounting bracket with the adjustment arm of the hanger  
bracket shown in dashed lines.

10 Figure 4 is a side view showing the invention mounted onto a joist.

Figure 5 is a cross-sectional view of the mounting bracket and a portion of the hanger  
bracket, taken along line V-V of Figure 1.

## DETAILED DESCRIPTION OF THE INVENTION

With reference to the figures, the invention will now be described in detail with regard  
5 for the best mode and the preferred embodiment. In general, the invention is an insulation  
hanger device that is quickly and easily positioned on adjacent joists or rafters. Joists are  
generally horizontally disposed boards oriented such that the short longitudinal edges form the  
top and bottom edges, and are typically 2x4, 2x6, 2x8, 2x10 or 2x12 inches in transverse  
dimensions. Rafters are similar boards disposed at an incline to form vaulted ceilings or roofs.  
10 The joists/rafters are usually mounted at intervals of 16 or 24 inches on center. The insulation  
hanger device is adjustable to account for the particular size of the joist/rafter encountered. The  
insulation hanger device is most preferably composed of a relatively rigid plastic.

The insulation hanger device comprises in combination a generally L-shaped hanger  
bracket 10 and a generally U-shaped mounting bracket 20, wherein the hanger bracket 10 is  
15 adjustable relative to the mounting bracket 20. The hanger bracket 10 comprises a support arm  
12 and an adjustment arm 11, such that in use the support arm 11 is disposed in a generally  
horizontal position and the adjustment arm is disposed in a generally vertical position, as shown  
in Figure 4. The upper surface of the support arm 12 is preferably provided with retention  
members 14, shown for example as pointed protrusions in the figures, that are adapted to prevent  
20 the insulation blanket 99 from slipping from the support arm 12, yet which allow the insulation  
blanket 99 to be raised from the support arm 12 if necessary to provide access above the  
insulation blanket 99. The adjustment arm 11 and support arm 12 are preferably relatively thin

and generally rectangular in transverse cross-section. In a preferred exemplary embodiment, the adjustment arm 11 of the hanger bracket 10 is approximately 8.5 inches in length, approximately 2.0 inches in width and approximately 0.125 inches in thickness, while the support arm 12 is approximately 8.125 inches in length, approximately 2.0 inches in width and approximately 0.125 inches in thickness, with retention members 14 extending upwardly approximately 0.5 inches. The adjustment arm 11 may also be provided with nail apertures 15 at various locations to allow the hanger bracket 10 to be secured at a fixed location on the joist/rafter 98 and further to allow the hanger bracket 10 to be used without the mounting bracket 20 if necessary or desired.

10 The mounting bracket 20 comprises a pair of leg members 29 depending from a transverse member 28, wherein the interior channel is sized to receive in a snug manner the top edge of the joist/rafter 98. One of the leg members 29 is provided with lateral retainer members 21 adapted to receive the adjustment arm 11 of the hanger bracket 10 in a sliding manner that allows relative movement of the adjustment arm 11 in the longitudinal direction, i.e., the vertical  
15 direction when the invention is properly disposed onto a joist/rafter 98. As shown in the figures, the lateral retainer members 21 comprise a total of at least two and preferably three L-shaped extensions positioned on opposing sides of the leg member 29 that cooperatively define a pathway for movement of the adjustment arm 11. The mounting bracket 20 may also be provided with a nail aperture 23 if it is desired to fix the location of the mounting bracket on the  
20 joist/rafter 98. In a preferred exemplary embodiment, the transverse member 28 is approximately 1.875 inches wide and the leg members 29 are each approximately 2.125 inches in length.

The insulation hanger device is preferably provided with adjustment means 30 that allow the adjustment arm 11 to be repositioned relative to the mounting bracket, but which also act to retain the adjustment arm 11 in the desired position once it has been properly adjusted. Preferably, the adjustment means 30 comprises cooperating structural components or detention features of the type illustrated, but alternative structures or mechanisms may be substituted. As shown in the figures and seen most clearly in Figures 3 and 5, the adjustment means 30 comprises in functional combination at least one and preferably a pair of detent ridge members 22 disposed on the leg member 29 of the mounting bracket 20, with the detent ridge members 22 extending generally laterally across the outer surface of the leg member 29 containing the lateral retainer members 21. In a preferred exemplary embodiment, the detent ridge members 22 are ridges having curved or beveled sides and extend less than approximately 0.020 inches from the surface, are approximately 0.125 inches in width and are separated by approximately 1.0 inch. The adjustment means 30 further comprises detent members 13 disposed at regular intervals on the surface of the adjustment arm 11 facing the mounting bracket 20. As shown, the detent members are preferably convex structures or circular bumps and, in a preferred exemplary embodiment, extend approximately 0.030 inches from the surface of the adjustment arm 11, are approximately 0.375 inches in diameter and are spaced at intervals of 0.75 inches on center.

In this manner, in the preferred secured position, each of an adjacent pair of detent members 13 will abut one of the detent ridge members 21 on the mounting bracket 20, as shown in Figures 3 and 5, such that relative movement of the adjustment arm 11 in either vertical direction is impeded. The curved surfaces of the detent ridge members 22 and the curved surface of the detent members 13 on the adjustment arm 11, combined with the inherent flexibility of the

plastic material composing the lateral retainer members 21, allow for adjustment with a relatively small amount of force, such that the support arm 12 can be raised or lowered as necessary relative to the joist/rafter 98 to properly position the insulation blanket 99. The adjustment arm 11 is furthermore adjustable relative to the mounting bracket 20 in increments of 0.5 inches  
5 utilizing the exemplary dimensions presented by locating one of the detent members 13 above the upper detent ridge member 22 instead of positioning a pair of detent members 13 between the two detent ridge members 22.

To utilize the invention, a plural number of insulation hanger devices are positioned facing toward each other between adjacent joists/rafters 98, approximately half of the devices on  
10 each side, by fitting the mounting brackets 20 onto the upper edge of the joists/rafters 98 such that the support arms 12 extend across the space between the adjacent joists/rafters 98. With a joist/rafter separation distance of approximately 16 inches, the support arms 12 will extend slightly more than halfway, while with a separation distance of approximately 24 inches a short gap will occur. The height of the support arm 11 relative to the joist/rafter 98 is adjusted to the  
15 proper length. If the length of the adjustment arm 11 is insufficient, the hanger bracket 10 is removed from the mounting bracket 20 and nailed directly to the joist/rafter 98, in which case the mounting bracket 20 is not used. The insulation blanket 99 is then laid on top of the support arms 12 spanning the space between the adjacent joists/rafters 98. The sharp retention members 14 will puncture the paper envelope of the insulation blanket 99, thus preventing the blanket 99  
20 from sliding from the support arm 12. If it is necessary to temporarily remove or reposition all or a portion of the insulation blanket 99 to provide access to the area above the blanket 99, the



blanket 99 is easily lifted without damage from the retention members 14 and the support arm 12. After access is no longer needed, the blanket 99 is easily repositioned.

It is understood that equivalents and substitutions for certain elements set forth above may be obvious to those skilled in the art, and therefore the true scope and definition of the

5 invention is to be as set forth in the following claims.